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RECORDED

COMPLETE SPECIFICATION.

Improvements in the Manufacture of Bread.

ALFRED TOOTH, 19 Addison Gardens, Kensington W. Analyst. I do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

My invention is an improvement in the manufacture of bread by the use of prepared whey which I name "Yeast Assimilator."

It enables the baker to dispense with the use of potatoes or other ferments saves time and labor in the process of manufacture, produces lighter and sweeter bread of exceptionally fine texture and flavor, which scales better, and retains its moisture longer than when made in any other manner, and does not go sour.

In my process I prepare the whey or yeast assimilator in the following manner.

Fresh or preferably skimmed milk is warmed to 100° F. the casein therein is coagulated by the addition of lactic acid, or other methods of acetification commonly practised in cheese making.

The whey is removed from the casein by filtration and pressure.

The specific gravity of the whey is then ascertained by an hydrometer and its density is doubled by the addition of sugar scientifically known as C_{24}, H_{22}, O_{22}, the liquid is then boiled for about two hours, and by the action of the lactic acid conjunctively with heat, this sugar C_{24}, H_{22}, O_{22} is more or less changed into sugar known by the formula C_{24}, H_{28}, O_{28}.

The free acid in the solution is then neutralised by carbonates of the alkaline earths, which it is essential should be of virgin purity, and in no other manner can they be relied upon, excepting as obtained in solution in pure deep well water derived from the chalk or limestone rocks and which water should be selected with about 40 grains carbonate of lime in the gallon, and added in sufficient quantity to the whey until the acid therein is neutralised, together with half a lb. of pure salt (NaCl) to each 25 gallons of whey to confer on the yeast assimilator the requisite keeping properties.

The liquid is again boiled which precipitates the excess of carbonate of lime the whole is then to be filtered and the clear liquid concentrated by evaporation in open steam pans or preferably *in vacuo* to any condition that may be desired between liquidity and complete dryness.

Or for greater economy in time and labor the concentrated liquid whey may be mixed with ground malt or ground raw grain to the state of paste and its desiccation completed or not to dryness in suitable ovens for the purpose.

The yeast assimilator so produced contains a combination of natural elements *viz.* three sugars. 1stly from the whey symbolised as C_{24}, H_{24}, O_{24}, 2ndly the sugar added to the whey known as C_{24}, H_{22}, O_{22} and which is more or less transformed by the lactic acid and heat into sugar known as C_{24}, H_{28}, O_{28}, also the other natural constituents in the whey and the well water existing therein as sulphates chlorides, phosphates, and lactates, with salt (NaCl) superadded as a preservative.

The most perfect natural yeast food is so obtained and in the most desirable soluble form for ensuring in the process of bread making healthy regular action at low temperatures essential for securing sweet vinous fermentations, and thereby preventing the volatilisation of the delicate aroma of the flour which is entirely lost when the dough is worked at high heats.

The [illegible] assimilator effects other improvements in the quality of the bread [illegible] obtained by the use of potato ferments, so called patent yeast [illegible]mpounds or by glutinous dark colored malt extracts.

[illegible] a density of 1,100 the assimilator is used in the proportion [illegible]ck of flour weighing 280 lbs.

At the density of 1,300 one and a quarter to one and half pints is used per sack of flour and in like proportion for any density less than 1,100 or greater than 1,300.

In the form of paste, or powder with or without ground malt or ground raw grain one to one and a half lbs. weight is used to the sack of flour of 280 lbs. and in every case the assimilator must be first mixed with the customary water before adding the yeast and making either sponge or dough.

According to the locality, the season, the breed of cows, and the manner in which they are fed the composition of the whey is very variable, so also is the well water and I do not limit myself to any fixed proportions of the three sugars named or of the other constituents principally derived from the milk and partly from the water or of the salt (NaCl) superadded as a preservative or to an absolutely neutral compound.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is

The use of prepared whey termed yeast assimilator in the manufacture of bread in the liquid state or desiccated to the state of a semi solid—or to dryness with or without being mixed with ground malt or ground raw grain and being a compound containing one or all of the three sugars respectively known as C_{24}, H_{22}, O_{22} C_{24}, H_{28}, O_{28}—and C_{24}, H_{24}, O_{24} with one or all of the constituents of the whey and the well water *viz.* lime, potash, soda and magnesia existing as sulphates, chlorides, phosphates and lactates with superadded salt (NaCl) and with or without ground malt or ground raw grain.

As witness my hand this 9th day of April 1891.

ALFRED TOOTH.

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